

REMARKS

In the Final Office Action, the Examiner rejected claims 1-19 and 42-46. By this paper, the Applicants amended claims 1 and 42 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 1-19 and 42-46 will be pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Claim Rejections under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 42-46 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner stated that the term “lengthwise and crosswise” as recited in claims 42-46 is not supported by the specification. The Applicants respectfully traverse this rejection.

Legal Precedent

First, regarding the written description requirement, the initial burden of proof regarding the sufficiency of the written description falls on the Examiner. Accordingly, the Examiner must present evidence or reasons why persons skilled in the art would not recognize a description of the claimed subject matter in the applicant's disclosure. *In re Wertheim*, 541 F.2d 257, 262, 191 U.S.P.Q. 90, 96 (CCPA 1976). The Examiner is also reminded that the written description requirement does not require the claims to recite the same terminology used in the disclosure. The patentee may be his own lexicographer. *Ellipse Corp. v. Ford Motor Co.*, 171 U.S.P.Q. 513 (7th Cir. 1971), *aff'd.* 613 F.2d 775 (7th Cir. 1979), *cert. denied*, 446 U.S. 939 (1980). Moreover, any information contained in any part of the application as filed, including the specification, claims and drawings, may be added to other portions of the application without introducing new matter. Accordingly, if an application as originally filed contains a claim disclosing material not disclosed in the remainder of the specification, the applicant may amend the specification

to include the claimed subject matter. *In re Benno*, 768 F.2d 1340, 226 U.S.P.Q. 683 (Fed. Cir. 1985).

Second, regarding the enablement requirement, the Examiner has the initial burden to establish a *reasonable basis* to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993). The test for enablement, as set forth by the Supreme Court, is whether the experimentation needed to practice the invention is undue or unreasonable? *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991). The *undue experimentation* test essentially evaluates whether one of reasonable skill in the art can make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *U.S. v. Teletronics, Inc.*, 857 F.2d 778, 785, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988). As long as the specification discloses at least one method for making and using the claimed invention that bears a *reasonable correlation* to the entire scope of the claim, then the enablement requirement of section 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 24 (C.C.P.A. 1970). The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. *In re Borkowski*, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970).

In regard to the "skilled in the art" standard, in cases involving both the art of computer programming, and another technology, the examiner must recognize that the knowledge of persons skilled in both technologies is the appropriate criteria for determining sufficiency. See *In re Naquin*, 398 F.2d 863, 158 USPQ 317 (CCPA 1968); *In re Brown*, 477 F.2d 946, 177 USPQ 691 (CCPA 1973); and *White Consol. Indus. v. Vega Servo-Control, Inc.*, 214 USPQ 796, 822 (S.D.Mich. 1982), *aff'd on related grounds*, 713 F.2d 788, 218 USPQ 961 (Fed. Cir. 1983).

Deficiencies of Rejection

First, with regard to claims containing subject matter allegedly not described in the specification, the Applicants submit that the original application fully supports the lengthwise and crosswise claim recitations. For example, FIG. 2 and paragraph 22, 24 of the original application disclose:

The rotatable shaft 18 has an inlet passageway 56 that leads to a central passageway 58 extending axially through the shaft 18. In the illustrated embodiment, the inlet passageway 56 extends radially through the wall of the shaft 18 from the central passageway 58 to the transfer coupling 22. The shaft 18 has an outlet passageway 68 that extends radially outward through a wall of the shaft 18 from the central passageway 58 to the transfer coupling 22. The outlet passageway 68 enables cryogenic fluid 66 to flow radially out of the shaft 18 to the cryogenic transfer coupling 22.

It is clearly evident the “lengthwise passageway” as recited in the claims is supported by, for example, the central passageway 58 as set forth in the foregoing passage. Similarly, the “crosswise passageway” as recited in the claims is supported by, for example, the inlet passageway 56 or the outlet passageway 68 as set forth in the foregoing passage. The Examiner is also reminded that the written description requirement does not require the claims to recite the same terminology used in the disclosure. In view of the foregoing passage, the lengthwise and crosswise claim recitations are clearly supported by the original application.

For at least these reasons, among others, the Applicants respectfully request withdrawal of the rejections under Section 112, first paragraph.

Claim Rejections under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-19 and 42-46 under 35 U.S.C. § 102(b) as anticipated by Shoykhet, (U.S. Patent No. 6,351,045, hereinafter “Shoykhet”). Applicants respectfully traverse this rejection.

Legal Precedent

First, the pending claims must be given an interpretation that is reasonable and consistent with the *specification*. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); see also M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is “the primary basis for construing the claims.” See *Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. See *id.*

Second, interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. See *In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. “The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” See *Collegenet, Inc. v. ApplyYourself, Inc.*, No. 04-1202, -1222, 1251, at 8-9 (Fed. Cir. August 2, 2005) (quoting *Phillips*, No. 03-1269, -1286, at 16). The Federal Circuit has made clear that derivation of a claim term must be based on “usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art.” See *id.*

Third, anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited

reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Fourth, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.* Regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. *See* M.P.E.P. § 2173.05(g); *In re Swinehart*, 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); *In re Schreiber*, 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997). If the Examiner believes the functional limitation to be inherent in the cited reference, then the Examiner “must provide some evidence or scientific reasoning to establish the reasonableness of the examiner’s belief that the functional limitation is an inherent characteristic of the prior art.” *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Inter. 1986).

Claim 1 and the Claims Depending Therefrom.

Turning to the claims, the amended independent claim 1 recites, *inter alia*, “a first passageway extending through a side wall of the rotatable shaft to the axial passageway.” Claim 1 further recites, *inter alia*, “wherein the first passageway is oriented transverse to the axial passageway at least through the side wall.” Dependent claim 4 recites, *inter alia*, “a first axial tube and a second axial tube disposed side-by-side within the axial passageway.” Dependent claim 10 recites, *inter alia*, “the first passageway and the second passageway extend radially through the rotatable shaft.”

The Shoykhet reference fails to teach or suggest “a first passageway extending through a side wall of the rotatable shaft to the axial passageway” and “the first passageway is oriented transverse to the axial passageway at least through the side wall,” as recited by claim 1. In contrast, the Shoykhet reference discloses the rotor shaft 316 containing a rotating caging wall 350 that is disposed internally between the shaft and bearing 322, and on a rotating support 364 that is disposed internally between the shaft 316 and bearing 366. See Shoykhet, FIG. 2, col. 6, lines 62-65. Specifically, Shoykhet reference discloses:

Cryogenic transfer coupling 310 comprises a supply flow path 314 connected to a cryogenic cooler that circulates a cryogenic coolant to the through a rotor shaft 316, thereby cooling superconducting coils in the rotor, and returning the coolant to the cooler through return flow path 320. Supply flow path 314 comprises a stationary portion 313 having an outer wall 311, and a rotating portion 315 having an outer wall 360. Wall 311 also defines a radial inner wall of a vacuum cavity 340. Vacuum cavity 340 has a stationary radial outer wall 338 also serves as a radial inner wall for a stationary portion 342 of the return flow path 320 that is surrounded by wall 344. Wall 344 also defines the inner wall of a vacuum cavity that is surrounded by a stationary outer wall 330. Wall 330 extends axially downward past the return flow path 320 and inner wall of the bearing 366 until ultimately connecting with the wall 311. At least one opening 372 exists in wall 330 at the point where it crosses the return flow path 320. Caging wall 350 includes an opening 374 at the point where it crosses the return flow path 320.

Shoykhet, FIG. 2, col. 6, lines 44-61, col. 7, lines 7-9 (emphasis added). Clearly, Shoykhet does not disclose “a first passageway extending through a side wall of the rotatable shaft to the axial passageway” and “the first passageway is oriented transverse to the axial passageway at least through the side wall,” as recited in claim 1.

In addition, Shoykhet is missing features recited in the dependent claims. For example, Shoykhet does not disclose “a first axial tube and a second axial tube disposed side-by-side within the axial passageway” as recited in claim 4. Shoykhet also fails to disclose “the first passageway and the second passageway extend radially through the rotatable shaft” as recited in claim 10. Dependent claim 7 recites, *inter alia*, “the first axial tube and the second axial tube each comprise a coating operable to reduce the emissivity of the first axial tube and the second axial tube to reduce radiative heat transfer to the cryogenic fluid.” Shoykhet fails to disclose “the first axial tube and the second axial tube each comprise a coating” as recited in claim 7. In contrast, Shoykhet discloses that for instance, vacuum cavity 62 eliminates heat transfer due to convection from the warm rotor shaft 16 to the rotating portion 54 of the return flow path 20 as well as gap 28, and additionally from the rotating portion of the return flow path to the rotating portion to the rotating portion of the supply flow path 14. *See* Shoykhet, FIG. 1, col. 5, lines 28-33.

For at least these reasons, among others, the Shoykhet reference cannot anticipate independent claim 1 and its dependent claims.

Claim 11 and the Claims Depending Therefrom.

Independent claim 11 recites, *inter alia*, “a transfer coupling comprising a passageway operable to be disposed radially around a rotatable shaft to couple cryogenic fluid between a source of cryogenic fluid and another passageway extending through the rotatable shaft”. Independent claim 11 further recites, *inter alia*, “the passageway and the other passageway are generally transverse to one another.”

With respect to Shoykhet, FIGS 1 and 3 of this reference illustrates that a cryogenic transfer coupling 10 delivers coolant from a cryogenic cooler 12 connected to a supply flow path 14 that extends into a rotor shaft and is connected to a return flow path 20. The cryogenic coolant is circulated throughout the cooling system, thereby cooling coils of a rotor 18. *See* Shoykhet, FIGS 1 and 3, col. 3, lines 46-51. Shoykhet fails to disclose “a transfer coupling comprising a passageway operable to be disposed radially around a rotatable shaft to couple cryogenic fluid between a source of cryogenic fluid and another passageway extending through the rotatable shaft” and “the passageway and the other passageway are generally transverse to one another.”. It is clearly evident that the transfer coupling is disposed within the rotor shaft.

Applicants respectfully submit that Shoykhet cannot support a *prima facie* case of anticipation of claim 11. Accordingly, Applicants respectfully submit that independent claim 11 and claims depending therefrom are allowable, and respectfully request the Examiner to reconsider the rejection of these claims.

Claim 42 and the Claims Depending Therefrom.

Amended independent claim 42 recites, *inter alia*, “a crosswise passageway extending in a crosswise direction through an outer perimeter of the rotatable shaft to the lengthwise passageway”. Dependent claim 46 recites, *inter alia*, “a coolant transfer coupling disposed radially around the rotatable shaft”. Although the Applicants do not intend or suggest that the specification should be read into the claims, the Applicants stress that the specification provides meaning and context to the features recited in the claims. With reference to the original application, the inlet passageway 56 extends radially through the wall of the shaft 18 from the central passageway 58 to the transfer coupling 22. *See* original application, FIG. 2, page 5, paragraph 22. The crosswise passageway extends in a crosswise direction through an outer perimeter (e.g., wall) of the shaft to the lengthwise passageway. As discussed above, Shoykhet fails to disclose “a crosswise passageway extending in a crosswise direction through an outer perimeter of

the rotatable shaft to the lengthwise passageway" and "a coolant transfer coupling disposed radially around the rotatable shaft" as recited in claim 42. Independent claim 42 and claims depending therefrom are believed to be in condition for allowance. Reconsideration and allowance of independent claim 42 and claims depending therefrom are requested.

Conclusion

The Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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